UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/705,661	11/03/2000	Kazuto Okazaki	4296-123	6250

7590 06/03/2003

Diane Dunn McKay Esq
Mathews Collins Shepherd & Gould PA
100 Thanet Circle
Suite 306
Princeton, NJ 08540

EXAMINER
RIDLEY, BASIA ANNA

ART UNIT	PAPER NUMBER
1764	10

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/705,661	OKAZAKI ET AL.	
	Examiner	Art Unit	
	Basia Ridley	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 March 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-13* is/are pending in the application.

4a) Of the above claim(s) *11-13* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *24 March 2003* is: a)☐ approved b)☒ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Claims 11-13 are withdrawn from consideration pursuant to 37 CFR 1.142(b) as being drawn to non-elected invention, there being no allowable generic or linking claim. The grounds of restriction were set forth in Paper 6. The restriction was made final in Paper 8.

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 24 March 2003 have been disapproved for the reasons set forth below.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

- Fig. 1-3, ref. no. "19";
- Fig. 3, ref. no. "1-1".

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

- lines 1 - 10, with reference to Fig. 2;
- lines 1 - 11, with reference to Fig. 3.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because the following reference characters have been used to designate more than one feature:

- "1" has been used to designate both a line and liquid coolant supply system;
- "2" has been used to designate both a line and liquid coolant heater;
- "3" has been used to designate both a line and evaporator;
- "4" has been used to designate both a line and oxidation reactor;
- "5" has been used to designate both a line and acrylic acid absorbing column;
- "6" has been used to designate both a line and solvent separating column;
- "7" has been used to designate both a line and refining column;
- "8" has been used to designate both a line and absorbing solvent cooler;
- "9" has been used to designate both a line and circulation cooler;
- "10" has been used to designate both a line and condenser.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

6. The drawing(s) is/are objected to as failing to comply with 37 CFR 1.84(q) because Fig. 2 contain(s) lead lines without corresponding reference numbers.

Specification

7. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. The objections listed below are merely exemplary. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

8. The disclosure is objected to because of the following informalities:

- inconsistent numbering of elements throughout the specification: e.g. "line 4" and "reactor 4", "line 5" and "absorbing column 5", "line 1" and "liquid coolant supplying system 1", "line 8" and absorbing solvent cooler 8", etc.

Appropriate correction is required. Applicant is reminded that no new matter shall be added.

Claim Objections

9. Claim 10 is objected to because of the following informalities: recitation "coolant used in said heat exchangers to the means (...)" should be replaced with --coolant from said heat exchangers to the means (...)--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claim(s) 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (as shown in Fig. 1 of instant specification and as described on P1/L15-P5/L29) in view of Oswalt et al. (USP 4,769,998).

Regarding claim(s) 8-10, Admitted Prior Art disclose(s) similar apparatus for production of acrylic acid or acrolein comprising:

- an evaporator (3) for gasifying liquefied propylene and/or propane (14);
- means (24) for supplying a coolant (17) to said evaporator (3);
- means (3) for chilling the coolant (17) in the evaporator (3) by recovering latent heat of the

liquefied propylene and/or propane (14) (P3/L19-25);

- means (4) for subjecting resultant gasified propylene and/or propane to a catalytic gas phase oxidation reaction thereby preparing a gas containing acrylic acid or acrolein (Fig. 1);
- wherein said means (3) chilling the coolant (17) includes means (24) for adjusting the temperature of said coolant (17) or means for adjusting a flow amount thereof (Fig. 1).

Admitted Prior Art discloses that a coolant supplied to said evaporator is chilled by evaporating liquefied propylene and/or propane (Fig. 1) and the reference discloses that said apparatus comprises various heat exchangers which use a liquid coolant (Fig. 1 and P2/L24-P3/L18). The reference does not explicitly disclose that a liquid coolant can be supplied to said evaporator, chilled there to prepare a chilled coolant and that said chilled coolant can be used in said heat exchangers in the apparatus and later re-circulated back to the evaporator.

Oswalt et al. teaches that it is known to prepare a process coolant, which can be used as a coolant in heat exchangers in various processes (C1/L9-19), by passing a liquid coolant through an evaporator (6). Chilled coolant from said evaporator (6) is used in various processes and spent process coolant is being re-circulated back to the evaporator (6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a liquid coolant in the evaporator of Admitted Prior Art to prepare a chilled coolant and to use said chilled coolant in heat exchangers in the apparatus for production of acrylic acid or acrolein, as taught by Oswalt et al., for the purpose improving operation efficiency. Said modification would merely amount to using an available coolant rather than a coolant which has to be prepared in auxiliary process, therefore saving an operation cost of said auxiliary process.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was

commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Response to Amendment and Arguments

13. Regarding applicant's comments addressing alleged rejection under 35 USC 112 Paragraph 1, the examiner notes that instant claims were not rejected under 35 USC 112 Paragraph 1. The amendments which applicant submitted on 24 March 2003 overcame the rejection under 35 USC 112 Paragraph 2, and accordingly said rejections have been withdrawn.

14. Applicant's arguments filed on 24 March 2003 have been fully considered but they are not persuasive.

15. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

16. The applicant argues that the disclosure of Oswalt et al. is not related to production of acrylic acid or acrolein. This is not found persuasive. The Admitted Prior Art discloses that a coolant supplied to said evaporator is chilled by evaporating liquefied propylene and/or propane (Fig. 1) and the reference discloses that said apparatus comprises various heat exchangers which use a liquid coolant (Fig. 1 and P2/L24-P3/L18). Oswalt et al. teaches that it is known to prepare a process coolant, which can be used as a coolant in heat exchangers in various processes (C1/L9-19), by passing a liquid coolant through an evaporator (6). Chilled coolant from said evaporator (6) is

used in various processes and spent process coolant is being re-circulated back to the evaporator (6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a liquid coolant in the evaporator of Admitted Prior Art to prepare a chilled coolant and to use said chilled coolant in heat exchangers in the apparatus for production of acrylic acid or acrolein, as taught by Oswalt et al., for the purpose improving operation efficiency. Said modification would merely amount to using an available coolant rather than a coolant which has to be prepared in auxiliary process, therefore saving an operation cost of said auxiliary process. One of ordinary skill in the art would recognize that a chilled coolant can be used in various heat exchangers, without changing the principles of operation of the main process which involves said heat exchangers, and therefore, when looking for modification of a heat exchangers, to either save operation cost or improve operation efficiency, one of ordinary skill in the art would utilize teachings regarding said heat exchange operation which can be found in various applications, and not just in one specific application, such as production of acrylic acid or acrolein.

17. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In the instant case, the motivation for using the chilled coolant from evaporator of Admitted Prior Art as a cooling liquid in other heat exchangers in the process of Admitted Prior Art would be simple understanding of economics. One of ordinary skill in the art at the time of the invention knew that a process coolant, which can be used as a coolant in heat exchangers in various processes,

can be prepared by passing a liquid coolant through an evaporator, chilled coolant from said evaporator can be used in various processes and spent process coolant can be re-circulated back to the evaporator (as evidenced by Oswalt et al.). In view of this knowledge one of ordinary skill in the art would realize that operation costs can be saved if a cooling capacity already present in the process is used (by using a chilled coolant prepared in the evaporator) rather than by using an additional coolant prepared by auxiliary processes. To use a chilled coolant from the evaporator in the heat exchangers of the process of the Admitted Prior Art, as taught by Oswalt et al., would amount to nothing more than a use of a known material for its intended use in a known environment to accomplish entirely expected result. Further the examiner notes that while there must be some suggestion or motivation for one of ordinary skill in the art to combine the teachings of references to arrive at the claimed invention, it is not necessary that such be found within the four corners of the references themselves; a conclusion of obviousness may be made from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference. See *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969). Further, in any obviousness assessment, skill is presumed on the part of the artisan, rather than the lack thereof. *In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the

THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (703) 305-5418. The examiner can normally be reached on Monday through Thursday, from 8:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (703) 308-6824.

The fax phone number for Group 1700 is (703) 872-9311 (for Official papers after Final), (703) 872-9310 (for other Official papers) and (703) 305-6078 (for Unofficial papers). When filing a fax in Group 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communication with the PTO that are not for entry into the file of the application. This will expedite processing of your papers.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Basia Ridley
Examiner
Art Unit 1764

JERRY D. JOHNSON
PRIMARY EXAMINER
GROUP 1100

BR
May 28, 2003